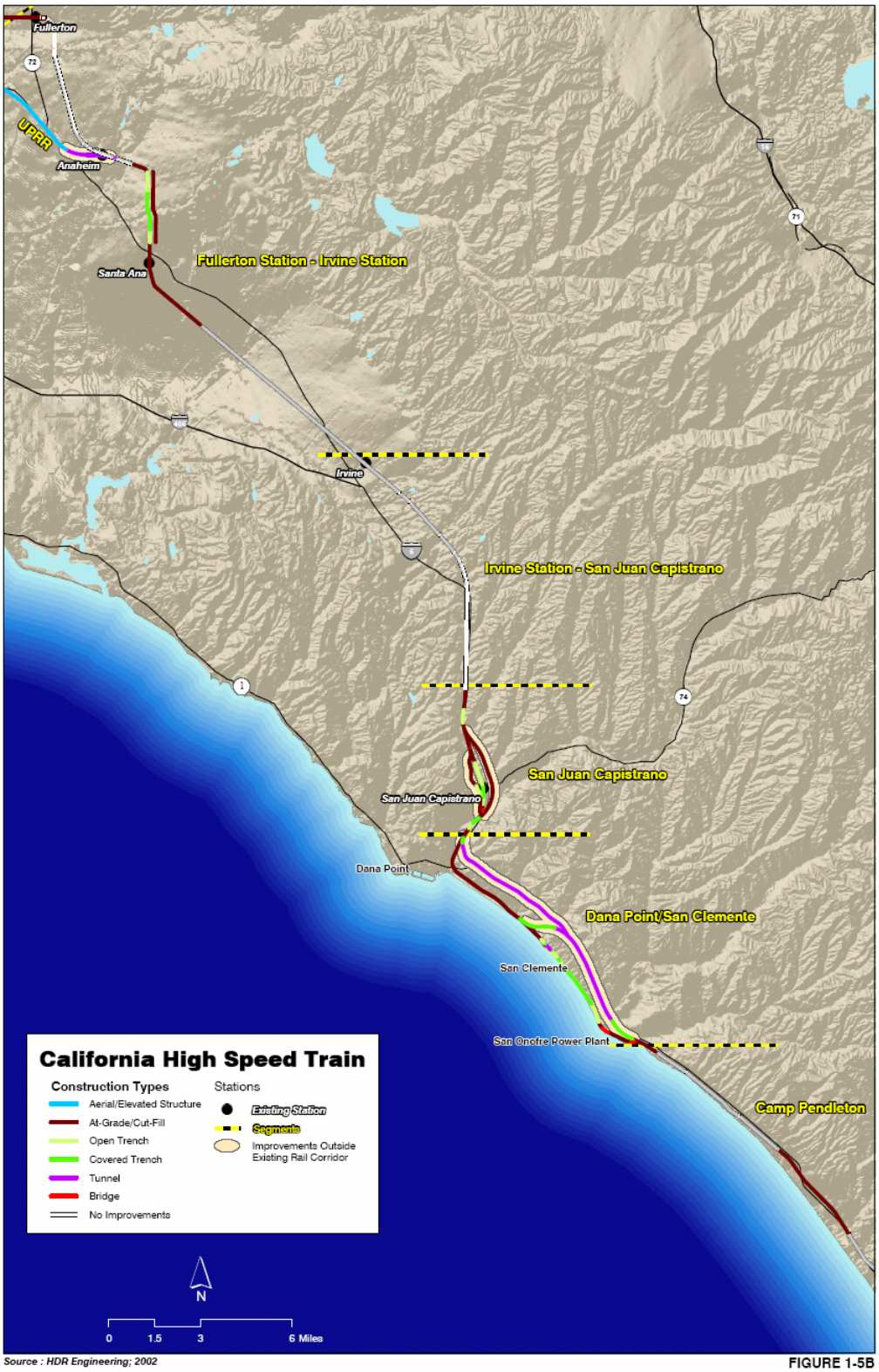
FIGURE 1-5B

High-Speed Train Alternative: Alignment and Construction Type by Segment (Fullerton to Camp Pendleton)

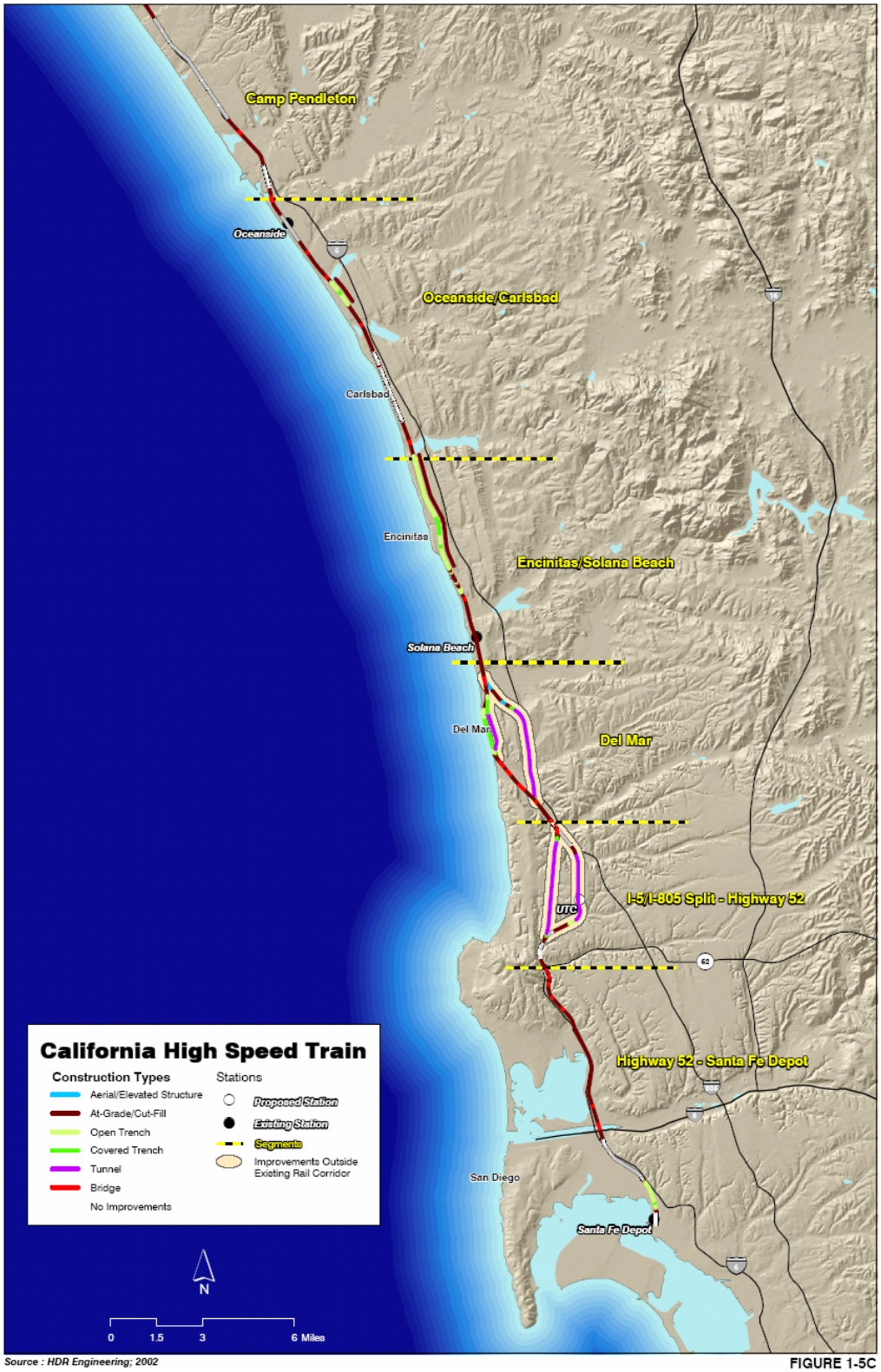


Source : HDR Engineering; 2002

FIGURE 1-5B

FIGURE 1-5C

High-Speed Train Alternative: Alignment and Construction Type by Segment (Camp Pendleton to San Diego)



Source : HDR Engineering; 2002

FIGURE 1-5C

2.0 BASELINE/AFFECTED ENVIRONMENT

2.1 STUDY AREA

The Study Area for visual resources is defined as ¼ mile from corridors and around stations. This is the extent of area where a change in landscape features would be most noticeable to viewers, and new features introduced into the landscape could begin to dominate the visual character of the landscape.

2.2 GENERAL DESCRIPTION OF REGIONAL LANDSCAPE

The existing local visual setting in the Los Angeles – Orange County – San Diego Region ranges from highly urbanized landscapes to undeveloped areas. The dominant types of landscapes and visual settings in the region are described in this section.

The No-Project Alternative includes the implementation of programmed improvements to highway, airports, and conventional rail by the year 2020. These improvements would not cause any substantial change to the existing (2002) visual environment because they involve expansion of and improvements within existing transportation corridors and at existing facilities. Therefore, the description of the existing environment and the evaluation in this report of potential impacts to that environment are considered to be valid for the future visual baseline condition in 2020 as well.

URBAN ENVIRONMENT

The majority of the existing rail corridor currently traverses through dense development that includes warehouses, commercial and industrial buildings, and residential housing (areas in Los Angeles County and northern/central Orange County, for example). The industrial uses are located along the railroad right-of-way, so the rail corridor is visible only from the streets that intersect it and parallel it as a frontage road. Limited landscaping and native vegetation exist in these industrial areas that are dominated by the typically large, box buildings. There are areas of high-density housing (multi-family and single-family dwelling units) in the foreground along the railroad right-of-way, most of which are typical, rectangular building shapes and regular lot patterns. Residential, commercial and industrial building structures blend with the surrounding environment with neutral colors, tones and textures. Rooftops and some occasional mountains can be seen in the background along the rail corridor. Historic structures such as Mission San Juan Capistrano and the Los Rios District (also in San Juan Capistrano), and more modern developments such as downtown Los Angeles or San Diego are examples of various urban settings. The historic areas typically include older structures, often with architectural importance, that vary in texture, size, and color.

Urban areas include a number of potential redevelopment sites. Underused areas subject to redevelopment often consist of abandoned buildings, pavement, industrial infrastructure, and junkyards. While these areas often served important military or industrial activities in the past, they are usually not visually compatible with the surrounding area. Reuse plans for such locations typically are prepared by local jurisdictions, and may improve the visual quality of the area. Parts of the downtown areas in Los Angeles and San Diego are examples of redevelopment areas in the urban setting.

SUBURBAN ENVIRONMENT AND COASTAL COMMUNITIES

There are a number of suburban communities in the region that are located close to commuter and transportation hubs, and surrounded by retail, business and residential land uses. The neighborhoods are moderately dense with more vegetation and landscaping than the residential areas found in the urban environment. Business locations and building structures are smaller and less dense with softer textures, color and tones than the urban environment. The city center and neighborhoods in these

communities are separated by transportation corridors and/or undeveloped land. Examples include Santa Ana, Carlsbad, and Encinitas.

In the area from Dana Point south to San Diego, many of the suburbs are coastal communities where the ocean and local beaches influence (and often dominate) the visual setting of the area. Ocean views in these areas are open and highly scenic. The topography varies from flat shorelines to vertical cliffs. Views from many homes and businesses are dramatic, and the buildings are situated to take full advantage of these views. Residences and small businesses in coastal communities are typically landscaped to blend in with the surrounding environment. Areas within the coastal communities may include small pockets of open space. Examples of coastal communities include San Clemente, Cardiff, Del Mar, and Solana Beach.

PARKS AND OPEN SPACE

Parks and open space in the region typically are high points with a dramatic backdrop to various settings such as urban areas, historical districts, parks, and wildlife preserves. Calafia Park (in San Clemente), Camp Pendleton, area beaches, and a number of lagoons are examples of parks and open space areas along the existing LOSSAN rail corridor. The Camp Pendleton area is undeveloped land with some large overhead transmission lines, some industrial facilities (e.g., San Onofre Power Plant), and the I-5 corridor. The beach areas and lagoons include residential and some small commercial buildings. These are usually landscaped to blend with the surrounding environment and are often found in small clusters.

2.3 LANDSCAPE TYPOLOGIES IN THE REGION

Seven viewing points have been selected that are associated with representative landscapes in this region that are typical of landscapes along the alternative corridors and around station sites. The selected viewing-point locations are shown in Figure 2-1. The landscape visible from each of the viewing points is illustrated in the photographs in Figures 2-2 through 2-5. Landscape typologies are described below for each of the selected viewing points.

VIEWPOINT NO. 1 – NORWALK

Viewpoint No. 1 depicts an Urban Environment along the high-speed rail alignment within the Union Pacific Railroad Santa Ana Brach corridor. The photograph (Figure 2-2) shows the site where the proposed Norwalk station would be located, at the southwest corner of Imperial Highway and Firestone Boulevard. Typical monotone box structures define the commercial uses along heavily traveled roadways. The area is relatively flat, with minimal landscaping or vegetation. Views are primarily restricted to the foreground due to the density of development. The surrounding area is highly developed with a mixture of commercial and industrial uses and residential areas on flat terrain.

VIEWPOINT NO. 2 - DANA POINT

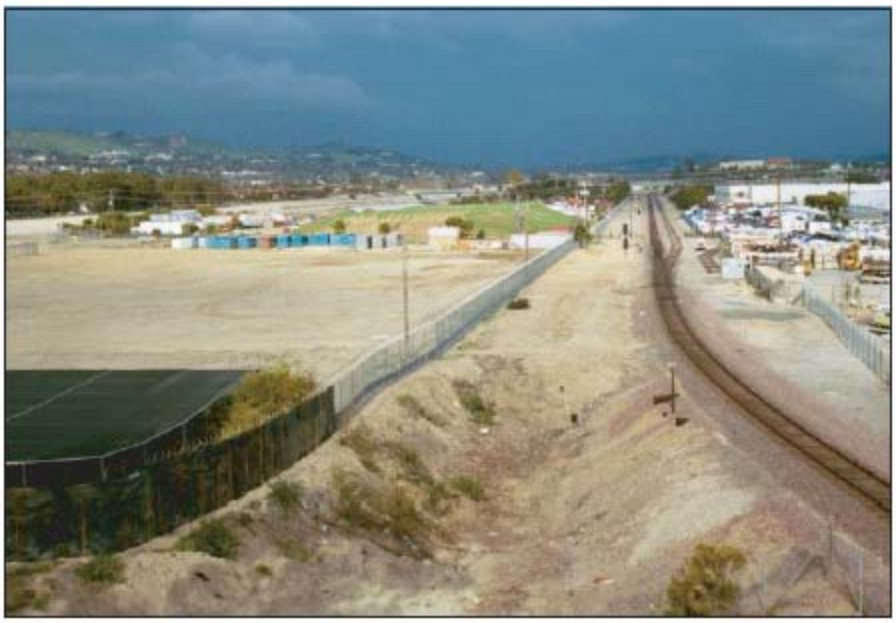
Another type of Urban Environment is shown in Viewpoint No. 2, along the existing LOSSAN rail corridor at the Dana Point curve, looking east from the Pacific Coast Highway 1 (Figure 2-2). The existing rail corridor in the Dana Point area crosses through a moderately populated, monotone industrial and business area and traverses to the east across flat and subtle terrain. The ocean and Pacific Coast Highway are located to the west. Hotels and homes are along the east side of the Pacific Coast Highway above the roadway and tracks. This viewpoint is dominated by the strong, linear form of the rail corridor and parallel fences on either side. The topography transitions from flat to sloped terrain in the background.

FIGURE 2-1
Photographic Location Map

FIGURE 2-2

Viewpoints 1 and 2

Viewpoint 1 - Norwalk (proposed station)



Viewpoint 2 - Dana Point

VIEWPOINT NO. 3 - SAN CLEMENTE

An example of Coastal Community typology is shown in Viewpoint No. 3. Figure 2-3 shows the viewpoint in San Clemente, looking north from an existing pedestrian footbridge located just south of the pier off Paseo de Cristobal. The existing rail corridor is located along the flat and even shoreline and beaches (to the west). In the foreground, the tracks run along the base of cliffs to the east, dominating the viewpoint. The shoreline and ocean are in the middle-ground with the pier and residences located along the bluff tops in the background. The strong, horizontal line of the rail corridor interlocks and contrasts with the strong, vertical line of the cliffs, creating a strong edge effect. Residences along the bluff tops provide highly scenic, distant views of the shoreline and ocean.

VIEWPOINT NO. 4 – CARLSBAD

A regional example of the Suburban Environment is shown in Viewpoint No. 4 (Figure 2-3). Carlsbad Village is an area of continuous buildings that include restaurants, shops, and hotels. Figure 2-3 shows the view in Carlsbad looking south from Tamarack Avenue along the existing LOSSAN rail corridor. The flat, linear forms of the roadway and rail corridor dominate the foreground view. Large trees and other vegetation around shops and on undeveloped land help to break the strong, linear forms and add color in the middle- and background views.

VIEWPOINT NO. 5 - BATIQUITOS LAGOON

As an example of Open Space in the region, Viewpoint No. 5 (Figure 2-4) shows the existing railroad bridge crossing of the Batiquitos Lagoon, looking east from Carlsbad Boulevard/ Coast Highway 101 (S21). The existing rail tracks parallels the east side of Coast Highway 101 traversing the lagoon in a north-south direction. The lagoon provides color and textural contrast to the surrounding area, and dominates the viewpoint. The strong linear form of the bridge is also prominent in the middle-ground view. In the background, residences are located north and south of the lagoon.

VIEWPOINT NO. 6 – CARDIFF

As another example of a Coastal Community, Viewpoint No 6 in Cardiff (Figure 2-4) shows the view looking south from the intersection of San Elijo Avenue and Chesterfield Drive, with Coast Highway 101 (S21) and the ocean in the background. The existing rail corridor dominates this viewpoint in the foreground and middle-ground as it traverses south into the background. The tracks are located just east of and above Coast Highway 101, and west of and below San Elijo Avenue. The avenue is lined with small businesses (shops and restaurants) with uniform facades. Due to the gradual change in elevation, the two roadways and the tracks present a subtle, geometric and uniform transition in the landscape. Trees and other vegetation in the middle- and background add color and some textural contrast to the view.

VIEWPOINT NO. 7 - DEL MAR BLUFFS

Viewpoint No. 7 shows the view looking north from North Torrey Pines Road along the bluffs at Del Mar, a suburban Coastal Community (Figure 2-5). The existing LOSSAN rail corridor is located along the bluffs above the shoreline/beaches and below the residences. The landscape transitions from the ocean up to the top of the bluffs. The existing tracks dominate this viewpoint and are set between the shoreline below and the residential homes above, along a narrow portion of the bluffs. The strong, horizontal line of the rail corridor along the bluff tops contrasts with the strong, vertical line of the bluffs in the foreground and middle-ground. The horizontal form of the rail corridor interlocks with the vertical line of the bluffs, creating a strong edge effect. The ocean, in the far middle- and background, and the vegetation along the bluffs provide strong color and textural variety.

FIGURE 2-3

Viewpoints 3 and 4

Viewpoint 3 - San Clemente

Viewpoint 4 - Carlsbad

FIGURE 2-4

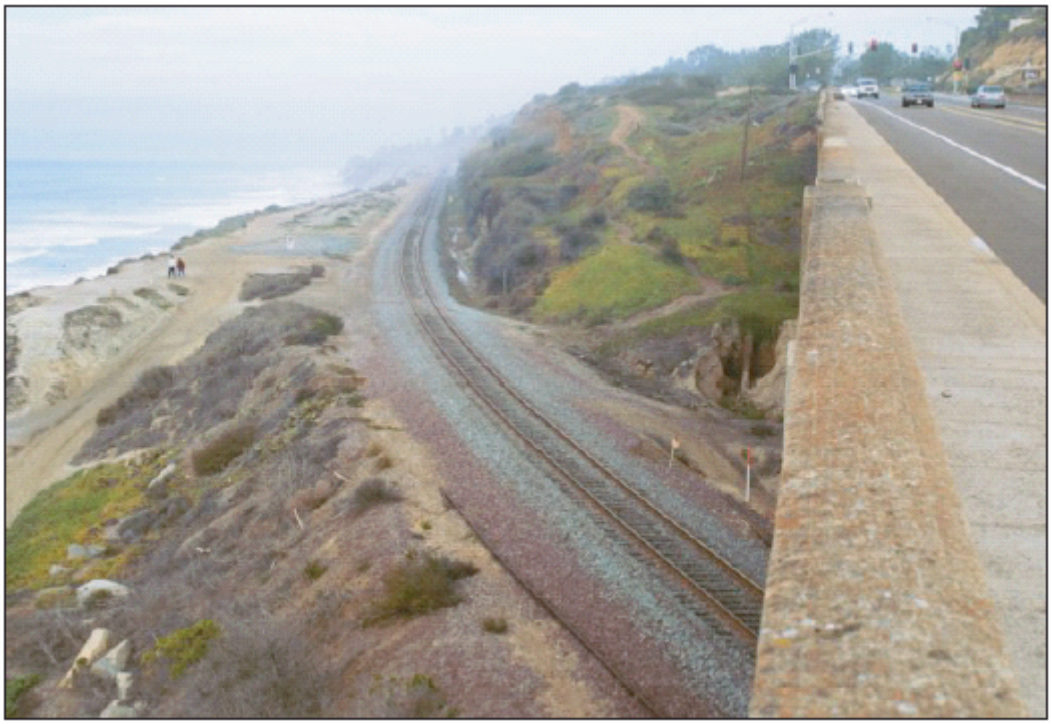
Viewpoints 5 and 6

Viewpoint 5 - Batiquitos Lagoon

Viewpoint 6 - Cardiff

FIGURE 2-5

Viewpoint 7



Viewpoint 7 - Del Mar Bluffs

3.0 METHODOLOGY FOR VISUAL ANALYSIS

The visual resource analysis for this program-level EIR/EIS is focused on a broad comparison of potential impacts to visual resources (particularly scenic resources or sensitive viewing areas) along corridors for each of the alternatives (high-speed train and modal alternatives) and around stations. The potential impacts for each of these alternatives are compared with the No-Project Alternative.

Because the region covers a number of different types of landscapes over a large geographic area (open-rural landscape, highly vegetated natural area, densely developed urban landscape, open barren landscape, etc.), a typology of landscapes is used to characterize the landscapes in the region that are within ¼ mile of the alternative corridors and stations. An example of each type of landscape is described in terms of the foreground, middle ground and background dominant features that make up its distinguishable color, texture, line, and form. The typology includes landscapes that are particularly scenic in the region, as well as landscapes that are typical. This makes up the baseline existing conditions against which the analysis of change or impact for each of the alternatives is compared. Photographs of the existing features for each of seven landscapes illustrate the dominant line, form, color and texture for that landscape type. The viewing points for each photograph of each landscape type are shown on the project Geographic Information System (GIS) map.

The impact tables for the region identify scenic/visual resources within the ¼ mile study area for each of the corridor segments and around station sites for the High-Speed Train Alternative, and along highway corridors and around airports for the Modal Alternative. Reference to the unique scenic landscapes and the typical landscapes described and illustrated in the typologies is made in the tables. Of particular concern are elevated structures (guideways or overpasses), and tunnel portals. Also of concern are the potential shadow effect of elevated structures and the light and glare effects of the alternatives. These changes, or visual impacts, are described and ranked as ‘high’, ‘medium’, or ‘low’ in the impact table according to the potential extent of change to scenic visual resources.

For selected landscapes, an alternative (high-speed train or modal) is then photo-simulated on the landscape photographs to illustrate if, and how, the dominant visual features that characterize the landscape would change if the alternative were implemented.

CEQA criteria for significant visual impacts includes, would the project:

- Have a substantial adverse effect on a scenic vista?
- Substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?
- Substantially degrade the existing visual character or quality of the site and its surroundings?
- Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?

Each of the CEQA criteria are considered in the ranking of potential impacts.

4.0 VISUAL IMPACTS

Table 4-1 summarizes the potential effects of the alternatives on the visual environment in the study area. Key factors considered in the evaluation of impacts for each alternative and alignment option are further described in the remainder of this chapter.

TABLE 4-1

Detailed Analysis/Comparison Table
Potential Impacts to Visual Resources
(Los Angeles - Orange County - San Diego)

	Scenic Corridors (miles) [1]	Scenic Viewing Points/Overlooks number within 1/4 miles (#)	Potential High Contrast Rating (H/M/L)	Potential Shadow Rating (H/M/L)
NO-PROJECT	See Text			
MODAL				
LAX To Union Station	N/A	N/A	No Impact no proposed roadway expansion projects identified in this segment	No Impact no proposed roadway expansion projects identified in this segment
Union Station To Fullerton Station	0	0	Low highly urbanized area - addition of lanes would increase visual mass of I-5 but remain consistent with existing environment	Low widening bridges, overpasses and urban interchanges would increase shadow effects
Fullerton Station To Irvine Station	0	0	Low highly urbanized area - addition of lanes would increase visual mass of I-5 but remain consistent with existing environment	Low widening bridges, overpasses and urban interchanges would increase shadow effects
Irvine Station To San Juan Capistrano City Limits	0	0	Low highly urbanized area - addition of lanes would increase visual mass of I-5 but remain consistent with existing environment	Low widening bridges, overpasses and urban interchanges would increase shadow effects
San Juan Capistrano	0	0	Low to Medium highly urbanized area - addition of lanes would increase visual mass of I-5 but generally remain consistent with existing environment; ROW expansion would require some substantial fill and cuts into hillsides	Low widening bridges, overpasses and urban interchanges would increase shadow effects

[1] There are no designated California State Scenic Routes in the visual resources study area for this project. While the existing LOSSAN rail corridor does provide views of the ocean and open spaces in some portions of its route, the established rail corridor itself is not considered a scenic corridor in the analysis represented in this table.

TABLE 4-1

Detailed Analysis/Comparison Table
Potential Impacts to Visual Resources
(Los Angeles – Orange County - San Diego) (continued)

	Scenic Corridors (miles)[1]	Scenic Viewing Points/Overlooks number within 1/4 miles (#)	Potential High Contrast Rating (H/M/L)	Potential Shadow Rating (H/M/L)
Dana Point/San Clemente	0	0	Low to Medium highly urbanized area - addition of lanes would increase visual mass of I-5 but generally remain consistent with existing environment; ROW expansion would require some substantial fill and cuts into hillsides	Low widening bridges, overpasses and urban interchanges would increase shadow effects
Camp Pendleton	0	1	Low addition of lanes would increase visual mass of I-5 but remain consistent with existing environment; viewing point is distant and additional infrastructure would not be discernible	Low widening bridges, overpasses and interchanges would increase shadow effects
Oceanside/Carlsbad	0	0	Medium ROW expansion would require some substantial fill and cuts into natural/vegetated hillsides, and increase visual mass of I-5 in lagoon/open space areas	Medium widening bridges, overpasses and interchanges would increase shadow effects in lagoons/open space areas
Encinitas/Solana Beach	0	0	Medium ROW expansion would require some substantial fill and cuts into natural/vegetated hillsides, and increase visual mass of I-5 in lagoon/open space areas	Medium widening bridges, overpasses and interchanges would increase shadow effects in lagoons/open space areas

[1] There are no designated California State Scenic Routes in the visual resources study area for this project. While the existing LOSSAN rail corridor does provide views of the ocean and open spaces in some portions of its route, the established rail corridor itself is not considered a scenic corridor in the analysis represented in this table.

TABLE 4-1

Detailed Analysis/Comparison Table
Potential Impacts to Visual Resources
(Los Angeles – Orange County - San Diego) (continued)

	Scenic Corridors (miles)[1]	Scenic Viewing Points/Overlooks number within 1/4 miles (#)	Potential High Contrast Rating (H/M/L)	Potential Shadow Rating (H/M/L)
Del Mar	0	0	Low to Medium highly urbanized area - addition of lanes would increase visual mass of I-5 but generally remain consistent with existing environment; ROW expansion would require some substantial fill and cuts into vegetated hillsides and rock slopes	Low widening bridges, overpasses and urban interchanges would increase shadow effects
I-5/805 Split To Hwy 52	0	0	Low highly urbanized area - addition of lanes would increase visual mass of I-5 but remain consistent with existing environment	Low widening bridges, overpasses and urban interchanges would increase shadow effects
Hwy 52 To Santa Fe Depot	0	0	Low highly urbanized area - addition of lanes would increase visual mass of I-5 but remain consistent with existing environment	Low widening bridges, overpasses and urban interchanges would increase shadow effects
Long Beach Airport	0	0	No Impact additional nine gates proposed would be consistent with existing environment	No Impact
HST CORRIDORS & STATION OPTIONS				
LAX To Union Station	0	0	Medium elevated track proposed in urban transportation corridor	Medium elevated track would create new shadow effects
Stations				
LAX	0	0	No Impact proposed station would be underground	No Impact proposed station would be underground

[1] There are no designated California State Scenic Routes in the visual resources study area for this project. While the existing LOSSAN rail corridor does provide views of the ocean and open spaces in some portions of its route, the established rail corridor itself is not considered a scenic corridor in the analysis represented in this table.

TABLE 4-1

Detailed Analysis/Comparison Table
Potential Impacts to Visual Resources
(Los Angeles – Orange County - San Diego) (continued)

	Scenic Corridors (miles)[1]	Scenic Viewing Points/Overlooks number within 1/4 miles (#)	Potential High Contrast Rating (H/M/L)	Potential Shadow Rating (H/M/L)
Union Station To Anaheim Station via UPRR	0	0	Medium elevated track proposed in urban/suburban transportation corridor	Medium elevated track would create new shadow effects
Stations				
Norwalk	0	0	Medium proposed new elevated station in urban setting	Medium proposed new elevated station in urban setting
Anaheim	0	0	No Impact proposed station would be underground beneath existing station	No Impact proposed station would be underground beneath existing station
Union Station To Irvine Station via LOSSAN	0	0	Low area is highly urbanized and the proposed improvements would be consistent with existing environment	Low grade separation would create some shadow effects in urban areas
Stations				
Norwalk	0	0	Low proposed improvements to existing station would be consistent with existing environment	No Impact
Fullerton	0	0	Low proposed improvements to existing station would be consistent with existing environment	No Impact
Anaheim	0	0	Low proposed improvements to existing station would be consistent with existing environment	No Impact
Santa Ana	0	0	Low proposed improvements at existing station would be consistent with existing environment	No Impact
Irvine	0	0	Low proposed improvements at existing station would be consistent with existing environment	No Impact

[1] There are no designated California State Scenic Routes in the visual resources study area for this project. While the existing LOSSAN rail corridor does provide views of the ocean and open spaces in some portions of its route, the established rail corridor itself is not considered a scenic corridor in the analysis represented in this table.

TABLE 4-1

Detailed Analysis/Comparison Table
Potential Impacts to Visual Resources
(Los Angeles – Orange County - San Diego) (continued)

	Scenic Corridors (miles)[1]	Scenic Viewing Points/Overlooks number within 1/4 miles (#)	Potential High Contrast Rating (H/M/L)	Potential Shadow Rating (H/M/L)
CONVENTIONAL RAIL (LOSSAN) & STATION OPTIONS				
Union Station To Fullerton Station (4th main track)	0	0	Low area is highly urbanized and the proposed improvements would be consistent with existing environment	No Impact
Fullerton Station To Irvine Station				
Alignments				
AT-GRADE between Walnut Ave (Orange) and E. 17th St. (Santa Ana)	0	0	Low area is highly urbanized and the proposed improvements would be consistent with existing environment	Low grade separations at street intersections would create some shadow effects in urban areas
TRENCH between Walnut Ave (Orange) and E. 17th St. (Santa Ana)	0	0	Beneficial Impact covered trench would remove at-grade rail infrastructure from view	No Impact
Stations				
Fullerton	0	0	Low proposed improvements at existing station would be consistent with existing environment	No Impact
Anaheim	0	0	Low proposed improvements at existing station would be consistent with existing environment	No Impact
Santa Ana	0	0	Low proposed improvements at existing station would be consistent with existing environment	No Impact
Irvine	0	0	Low proposed improvements at existing station would be consistent with existing environment	No Impact

[1] There are no designated California State Scenic Routes in the visual resources study area for this project. While the existing LOSSAN rail corridor does provide views of the ocean and open spaces in some portions of its route, the established rail corridor itself is not considered a scenic corridor in the analysis represented in this table.

TABLE 4-1

Detailed Analysis/Comparison Table
Potential Impacts to Visual Resources
(Los Angeles – Orange County - San Diego) (continued)

	Scenic Corridors (miles)[1]	Scenic Viewing Points/Overlooks number within 1/4 miles (#)	Potential High Contrast Rating (H/M/L)	Potential Shadow Rating (H/M/L)
Irvine Station To San Juan Capistrano City Limits(no improvements)	n/a	n/a	n/a	n/a
San Juan Capistrano (City Limits to Avenida Aeropuerto)				
Alignments				
Covered TRENCH/Cut-Fill between Trabuco Creek and Avenida Aeropuerto (trench goes under San Juan Creek); Double tracking	0	0	Low rail would be moved into covered and open trenches but would require new pedestrian overpasses downtown, and fencing along open trench areas	Low pedestrian overpasses would create new shadow effects in downtown area
TUNNEL along I-5 between Hwy 73 and Avenida Aeropuerto (tunnel under Trabuco Creek and San Juan Creek); Double tracking	0	0	Beneficial Impact existing tracks would be removed into tunnel; new impacts would occur at tunnel portals but would be relatively minor	No Impact
AT-Grade and Open TRENCH along east side of Trabuco Creek	0	0	Medium New impacts to residential and commercial areas on west side of creek	Low proposed structure widening over San Juan creek would increase shadow impacts but would be consistent with existing environment
Stations				
San Juan Capistrano	0	0	Low proposed improvements to existing station would be consistent with existing environment	No Impact

[1] There are no designated California State Scenic Routes in the visual resources study area for this project. While the existing LOSSAN rail corridor does provide views of the ocean and open spaces in some portions of its route, the established rail corridor itself is not considered a scenic corridor in the analysis represented in this table.

TABLE 4-1

Detailed Analysis/Comparison Table
Potential Impacts to Visual Resources
(Los Angeles – Orange County - San Diego) (continued)

	Scenic Corridors (miles)[1]	Scenic Viewing Points/Overlooks number within 1/4 miles (#)	Potential High Contrast Rating (H/M/L)	Potential Shadow Rating (H/M/L)
Dana Point/San Clemente (Avenida Aeropuerto To San Onofre Power Plant)				
Alignments				
Dana Point Curve Realignment; San Clemente - SHORT TRENCH; Double Tracking	0	0	High covered trench along coastline would reduce visibility of existing rail corridor, but construction along toe of bluffs would require seawalls that would degrade existing viewshed; major construction and transition structures on beach would impact visual environment	No Impact
Dana Point Curve Realignment; San Clemente - LONG TRENCH; Double Tracking	0	0	High covered trench along coastline would reduce visibility of existing rail corridor, but construction along toe of bluffs would require seawalls that would degrade existing viewshed; major construction on beach would impact visual environment	No Impact
Dana Point Curve Realignment; San Clemente - SHORT TUNNEL; Double Tracking	0	0	Beneficial Impact tunnel would remove existing rail along the coast and improve existing beach aesthetics	No Impact
San Clemente - LONG ONE-SEGMENT TUNNEL; Double Tracking	0	0	Beneficial Impact tunnel would remove existing rail along the coast and improve beach aesthetics	No Impact
San Clemente - LONG TWO-SEGMENT TUNNEL; Double Tracking	0	0	Beneficial Impact tunnel would remove existing rail along the coast and improve beach aesthetics	No Impact

[1] There are no designated California State Scenic Routes in the visual resources study area for this project. While the existing LOSSAN rail corridor does provide views of the ocean and open spaces in some portions of its route, the established rail corridor itself is not considered a scenic corridor in the analysis represented in this table.

TABLE 4-1

Detailed Analysis/Comparison Table
Potential Impacts to Visual Resources
(Los Angeles – Orange County - San Diego) (continued)

	Scenic Corridors (miles)[1]	Scenic Viewing Points/Overlooks number within 1/4 miles (#)	Potential High Contrast Rating (H/M/L)	Potential Shadow Rating (H/M/L)
Camp Pendleton (San Onofre Power Plant to Oceanside City Limits - Double tracking; crosses San Mateo, San Onofre, and Santa Margarita Creeks	0	1	Low proposed improvements would not alter existing viewshed; additional infrastructure would not be discernible from distant viewing point	No Impact
Oceanside/Carlsbad (Oceanside City Limits to Encinitas City Limits)				
Alignments				
Carlsbad - AT-GRADE; double tracking; crosses San Luis Rey, Buena Vista , Aqua Hedionda, and Batiquitos Lagoons	0	1	Low proposed improvements would be consistent with existing environment; additional infrastructure would not be discernible from distant viewing point	Low proposed structure widening over lagoons would increase shadow impacts but would be consistent with existing environment
Carlsbad -TRENCH; double-tracking; crosses San Luis Rey, Buena Vista, Aqua Hedionda, and Batiquitos Lagoons	0	1	Low would remove existing at-grade tracks into trench through Carlsbad, but open-trench sections would require fencing; additional infrastructure would not be discernible from distant viewing point	Low proposed structure widening over lagoons would increase shadow impacts but would be consistent with existing environment
Stations				
Oceanside	0	0	Low proposed improvements at existing station would be consistent with existing environment	No Impact

[1] There are no designated California State Scenic Routes in the visual resources study area for this project. While the existing LOSSAN rail corridor does provide views of the ocean and open spaces in some portions of its route, the established rail corridor itself is not considered a scenic corridor in the analysis represented in this table.

TABLE 4-1

Detailed Analysis/Comparison Table
Potential Impacts to Visual Resources
(Los Angeles – Orange County - San Diego) (continued)

	Scenic Corridors (miles)[1]	Scenic Viewing Points/Overlooks number within 1/4 miles (#)	Potential High Contrast Rating (H/M/L)	Potential Shadow Rating (H/M/L)
Encinitas/Solana Beach (Encinitas City Limits to Solana Beach Station)				
Alignments				
Encinitas - AT-GRADE; Double Tracking; crosses San Elijo Lagoon	0	0	Low proposed improvements would be consistent with existing environment	Low proposed grade separations and structure widening over lagoons would increase shadow impacts but would be consistent with existing environment
Encinitas - SHORT TRENCH; Double Tracking; crosses San Elijo Lagoon	0	0	Beneficial Impact covered trench would place existing tracks underground in part of the existing rail corridor	Low proposed grade separations and structure widening over lagoons would increase shadow impacts but would be consistent with existing environment
Encinitas - LONG TRENCH; Double Tracking; crosses San Elijo Lagoon	0	0	Beneficial Impact covered trench would place existing tracks underground in part of the existing rail corridor	Low structure widening over lagoons would increase shadow impacts but would be consistent with existing environment
Stations				
Solana Beach	0	0	Low proposed improvements at existing station would be consistent with existing environment	No Impact
Del Mar(Solana Beach Station to I-5/805 Split)				
Alignments				
COVERED TRENCH on bluffs; crosses San Dieguito and Los Penasquitos Lagoons	0	0	Medium to High trench option would remove existing tracks on bluffs into a covered trench, but seawalls and/or tie-back walls may be needed to stabilize bluffs over the long term	Low proposed structure widening over lagoons would increase shadow impacts but would be consistent with existing environment

[1] There are no designated California State Scenic Routes in the visual resources study area for this project. While the existing LOSSAN rail corridor does provide views of the ocean and open spaces in some portions of its route, the established rail corridor itself is not considered a scenic corridor in the analysis represented in this table.

TABLE 4-1

Detailed Analysis/Comparison Table
Potential Impacts to Visual Resources
(Los Angeles – Orange County - San Diego) (continued)

	Scenic Corridors (miles)[1]	Scenic Viewing Points/Overlooks number within 1/4 miles (#)	Potential High Contrast Rating (H/M/L)	Potential Shadow Rating (H/M/L)
TUNNEL under Camino Del Mar; crosses San Dieguito and Los Penasquitos Lagoons	0	0	Beneficial Impact tunnel option would remove existing tracks from bluffs and place them underground	Low proposed structure widening over lagoons would increase shadow impacts but would be consistent with existing environment
TUNNEL along I-5; crosses San Dieguito and Los Penasquitos Lagoons	0	0	Medium tunnel would remove existing tracks and place under-ground, but new visual impacts to residential views would result from elevated rail structure south of San Dieguito Lagoon, and from tunnel portal/transition located between two residential areas	Low tunnel would remove existing rail structure across Penasquitos Lagoon but structure over San Dieguito Lagoon would be widened, and elevated structure across south end of lagoon would add new shadow impacts
I-5/805 Split To Hwy 52				
Alignments				
Miramar Hill Tunnel	0	0	No Impact proposed tunnel improvement	No Impact proposed tunnel improvement
I-5 Tunnel	0	0	No Impact proposed tunnel improvement	No Impact proposed tunnel improvement
Stations				
UTC (Only applies to Miramar Hill Tunnel)	0	0	No Impact proposed station would be underground	No Impact proposed station would be underground
Hwy 52 To Santa Fe Depot (Curve realignment; Double Tracking; San Diego River Bridge; Trench between Sassafras St and Cedar St)	0	0	Low proposed improvements would be consistent with existing environment	Low new bridge structures over wetlands and creeks would increase shadow effects in these areas
Stations				
Santa Fe Depot	0	0	Low proposed improvements at existing station would be consistent with existing environment	No Impact

[1] There are no designated California State Scenic Routes in the visual resources study area for this project. While the existing LOSSAN rail corridor does provide views of the ocean and open spaces in some portions of its route, the established rail corridor itself is not considered a scenic corridor in the analysis represented in this table.

4.1 NO-PROJECT ALTERNATIVE

The No-Project Alternative includes the implementation of programmed improvements to highway, airports, and conventional rail by the year 2020 (refer to Table 1-3). These improvements would not cause any substantial change to the existing (2002) visual environment because they involve expansion of and improvements within existing transportation corridors and at existing facilities. Therefore, the evaluation in this report of potential impacts to the existing environment is also valid for the future baseline condition in 2020.

The No-Project Alternative would not have any direct impact on the visual environment in the study area. Continued population growth and associated increases in development and traffic would continue to alter and often degrade the aesthetic quality of many areas. The No-Project Alternative would preclude the opportunity to improve any of the existing visual impact of the LOSSAN Corridor in coastal-bluff areas of San Clemente and Del Mar.

4.2 MODAL ALTERNATIVE

The Modal Alternative includes future improvements to highways and airports that can service the same geographic area and demand as the proposed High-Speed Rail Alternative. Specifically for the Los Angeles – Orange County – San Diego Region, the Modal alternative would include transportation projects related to Interstate 5 and Long Beach airport.

The widening of an existing freeway (I-5) would add to the visual mass of the freeway, interchanges, bridges and overpasses. The most substantive visual impacts would result from the need for building outside the existing freeway right-of-way, often requiring displacement of existing uses and/or cutting into hillsides. The Modal Alternative would involve adding two to four lanes to I-5, in addition to the widening that will be in place by 2020 from the programmed improvements under the No Build Alternative (refer to Chapter 1). It is expected that the currently programmed improvements will use most or all of the remaining right-of-way in the I-5 corridor between Los Angeles and San Diego. Therefore, the Modal Alternative would alter the existing visual environment that currently exists along both sides of I-5.

The Modal Alternative would involve an additional four lanes along I-5 between Union Station and the junction of I-5 and Interstate 10 (I-10). This area is highly urbanized. Because of the scale and density of existing infrastructure in this area, the widening of I-5 under the Modal Alternative would not create a new, dominant visual mass. The lane additions and new urban interchanges would be noticeable but would not substantively change the urban transportation setting.

Two additional lanes would be needed along the remaining segments of I-5 from approximately 1-10 to San Diego. The areas from Norwalk to Anaheim, Anaheim to Irvine, and Irvine to I-405 are all developed with urban and suburban mixed uses. The freeway widening in these areas would add to the visual mass of the existing roadway corridor but would not introduce a new, dominant infrastructure feature and would generally be consistent with the existing visual environment.

From I-405 to SR-78, the freeway traverses through some developed areas (south Orange County) and undeveloped areas (Camp Pendleton). The addition of two lanes would be consistent with the existing visual environment through south Orange County, but would add visual mass and would alter the areas outside the existing freeway right-of-way. In some areas, widening the freeway and interchanges would displace developed uses and vegetation along the roadway, and require cuts and fill in hillsides that would noticeably alter the existing visual setting. Two lanes through Camp Pendleton would present a minimal impact to the existing, open viewshed, but would add to the freeway's visual mass in a largely undeveloped landscape.

South of Camp Pendleton, the Modal Alternative would add two lanes to I-5 through the communities of Oceanside, Carlsbad, Encinitas, Solana Beach, and Del Mar. Some of the existing mixed-use development

along the freeway would be displaced, and some substantial cuts would be needed in vegetated hillsides, rock slopes, and natural, open areas. The freeway bridges over lagoons would increase in size, adding visual mass in these areas.

South of Del Mar to the San Diego Airport, I-5 traverses through a developed area of mixed uses. The addition of two lanes would add visual mass and displace some uses adjacent to the freeway, but would generally be consistent with the visual existing environment.

The Modal Alternative would increase shadow footprints at bridges, overpasses, and elevated interchanges. Increases in shadows would cause little impact in most urban and suburban areas, but could cause more impact in natural areas and across the lagoons in San Diego County.

The primary impacts to area aesthetics during construction of the Modal Alternative would include contrast impacts where soil is newly disturbed along construction corridors, visual dominance of large construction equipment in localized areas and staging or lay-down areas, and loss of established vegetation along highway corridors. These impacts would be temporary until construction was completed and disturbed surfaces were paved or revegetated.

Long Beach Airport would accommodate service for the Los Angeles region and provide support to the capacity at LAX. Improvements for Long Beach Airport would consist of the addition of nine gates. No additional runways are considered for Long Beach Airport. No visual impacts are anticipated with the improvements to Long Beach Airport.

4.3 HIGH-SPEED TRAIN ALTERNATIVE

The High-Speed Train Alternative in the Los Angeles – Orange County – San Diego Region involves both electrified high-speed rail and conventional rail. Temporary, localized visual impacts would occur during construction, including contrast impacts in areas of soil disturbance at shafts, portals, and other construction areas; visual dominance in localized areas of large construction equipment and staging or lay-down areas; generation of spoils; and potential ground surface settlement from tunneling and excavation. These impacts would be temporary until construction was completed and disturbed surfaces were stabilized and revegetated.

Operational impacts to the aesthetic environment would include the presence of additional rail-related infrastructure and new stations or expanded facilities at existing stations. These impacts are described by segment below.

HIGH SPEED RAIL

One HSR alignment would be located along the Union Pacific Railroad's Santa Ana branch between Los Angeles International Airport (LAX) and Union Station, and from Union Station to Anaheim. These improvements would include elevated track, trenching, and at-grade track. Along this alignment, new underground stations would be constructed at LAX and Anaheim, and a new, elevated station is proposed in Norwalk. The other alignment option would utilize the existing LOSSAN corridor between Union Station and Irvine Station, and include electrified track, trenching, and tunneling. Parking improvements and bypass tracks are proposed at the existing Norwalk, Fullerton, Anaheim, Santa Ana, and Irvine Stations along the LOSSAN Corridor.

Impacts along the high-speed rail segments from LAX to Union Station, and from Union Station to Anaheim are rated as Medium, and would be related to the visibility and shadow impacts of the elevated track sections and the new station at Norwalk. These impacts would occur in the urbanized setting around existing transportation facilities, and would not dominate the visual environment. Elevated track improvements and the proposed elevated station at Norwalk would heighten the visibility of these improvements and would be noticeable, but they would not introduce major changes to the existing visual setting (refer to Figure 2-2).

CONVENTIONAL RAIL

Corridor improvements between Union Station and Fullerton Station include a fourth main track within the existing rail corridor. The majority of this segment traverses through a heavily developed area of existing residential, business, and industrial/commercial uses adjacent to the existing corridor. Low visual impacts are anticipated for this segment as the improvements are consistent with the current environment and existing rail corridor.

The segment between Fullerton Station and Irvine Station traverses through an urbanized and heavily developed area that includes residential, business, and industrial structures. The at-grade option for corridor improvements would be consistent with the existing environment and rail corridor. The covered trench option would have a beneficial impact on the existing visual environment by moving the at-grade tracks into a covered trench and eliminating the view of operating trains.

The existing rail corridor in the City of San Juan Capistrano traverses through a developed area with residential homes and historic and business districts. The trenching option through downtown is rated as a Low visual impact overall. This option would place the tracks below grade in partially covered trench, out of the viewshed of the existing residential areas, and reduce visual impacts associated with the existing corridor. However, the open-trench sections would need to be fenced for safety purposes, and pedestrian overpasses would be built to provide access across the trench. These elements would introduce new visual impacts to the area. The overpasses would also create new shadow impacts in the downtown area.

The tunnel option in San Juan Capistrano would follow the I-5 corridor, located east of the existing rail corridor. The tunnel would place the tracks out of the viewshed of surrounding areas and uses adjacent to the existing corridor, thus improving the existing visual environment. There would be new visual impacts created at the tunnel portals but these impacts would be low, and the removal of the existing at-grade tracks would result in an overall benefit to area aesthetics.

A third option through San Juan Capistrano would consist of an open trench and at-grade alignment west of the existing rail corridor, along the eastern side of Trabuco Creek. Although portions of this alignment would be below grade, the at-grade sections would introduce a new transportation corridor and operating trains along the creek. This would create impacts to the viewshed of residences along the western side of Trabuco Creek, and office/commercial uses and a private school located east of the creek. A pedestrian overpass may be needed at one or more locations across the trench, which would also create a new visual mass and shadow effects in the area. Because this option introduces new visual impacts to the residential and commercial uses in the vicinity, this option was evaluated as having a Medium visual impact.

The potential Dana Point curve realignment is located in a heavy industrial area. The realignment would cross underneath Pacific Coast Highway 1 (PCH) and the tracks would be located southwest of the existing tracks and a hotel. The realignment is consistent with the existing environment, and would not introduce a new visual impact to the area or the hotel. Low visual impacts are anticipated for the realignment.

Corridor improvements proposed through the City of San Clemente and portions of southern Dana Point include double tracking with trenching and tunnel options. The trenching options follow the existing corridor and the tunnel options follow the I-5 corridor. The existing rail corridor through San Clemente and southern Dana Point is along the coastline on the beach/shore. The trenching options would commence south of the San Clemente Metrolink Station and continue south with a combination of covered and open trenching segments. The tracks would either be at grade for the southern portion of San Clemente or be placed in a transition trench. Trenching options would move a portion of the existing at-grade tracks from the beach into a trench. However, rail construction at the toe of the bluffs would require construction of seawalls for the trench options as erosion protection and to stabilize the area. Seawalls would create high visual impacts along this open, highly scenic stretch of shoreline and beach property. Major construction activities and trench-transition structures on the beach would further

degrade the aesthetic environment. Open-trench transition areas would need to be fenced for public safety, adding another visual element to the viewshed.

The at-grade sections with the trenching options would be consistent with the existing rail corridor and the current viewshed. The portion of the trenching option through southern Dana Point is located along the coast traversing between PCH to the east and residential areas to the west. The trenching options would place the new tracks at grade with the existing tracks through this particular section. However, an existing concrete wall divides the homes from the existing rail corridor, thus the views from these homes would not be altered with the trenching option. Views of this segment from PCH would be consistent with the current visual environment.

The tunnel options through southern Dana Point and San Clemente would reduce existing visual impacts to the residential areas and PCH traffic because the tracks would be underground in an alignment that follows I-5. The tunnel options would improve the viewshed from homes, beaches, and roadways.

Camp Pendleton is primarily undeveloped land aside from the I-5 corridor and the San Onofre power plant. The existing rail corridor traverses through Camp Pendleton and the proposed improvements would not alter the viewshed from I-5, the rest stops and viewing points from I-5, or San Onofre State Beach. Low, largely indiscernible impacts would occur through Camp Pendleton.

Proposed corridor improvements through Carlsbad include double tracking for both the at-grade and trench options. Both options would be consistent with the current environment at Buena Vista Lagoon, north of Carlsbad, but the bridge would be widened so shadow impacts would increase somewhat. The existing tracks traverse through residential and commercial/business districts. The at-grade option would be consistent with the current environment and existing tracks. The trench option would reduce visual impacts because the existing tracks would be set behind businesses and below grade. Open trench sections would have to be fenced for security, so at-grade visual impacts would occur. Both options would be consistent with the current environment at Agua Hedionda Lagoon and Batiquitos Lagoon, but the widening of bridge structures would increase the visual mass and shadow impacts in these crossing areas. Both lagoons are located east of Coast Highway 101 (101) and west of I-5 with residential areas located to the north and south of the lagoons. The two options would be generally consistent with the current environment and existing tracks. Low impacts are anticipated for the improvements through Carlsbad and the lagoons.

Conventional rail options through the City of Encinitas include at-grade or trenching. Grade separations would be provided at major intersections. A mixture of land uses can be found along the existing rail corridor in the area, including residential and business/commercial areas. The at-grade option would reconfigure the intersection of Birmingham Drive and San Elijo Avenue, close Chesterfield Drive at San Elijo Avenue, and modify Leucadia Boulevard. A short trench section would be located at Birmingham Drive to improve vehicle and pedestrian traffic across the existing tracks. The 101 would be elevated to accommodate Birmingham Drive. The closure of Chesterfield Drive would eliminate the crossing with the existing tracks. In addition, the tracks would be depressed and Leucadia Boulevard would run above the tracks and the 101. San Elijo Lagoon is located north of Solana Beach, east of 101 and west of I-5 with residential areas located to the north and south of the lagoon and a few businesses and restaurants along the 101 adjacent to the lagoon. The grade separations and structure widening over the San Elijo Lagoon would increase shadow impacts in these areas, but would be consistent with the existing visual environment. Impacts of the at-grade option are evaluated as Low.

The short or long trenching options would create an improvement to the existing visual characteristics of the area and would be a beneficial impact. The tracks would be depressed, thus removing the existing rail infrastructure from views along the corridor from residential and business areas. Grade separations (proposed with the short trench) would create new visual mass and some shadow impacts in the urban environment. Structure widening over the lagoon would increase shadow effects but would be consistent with the existing aesthetics. Low impacts are anticipated for either trench option through Encinitas and San Elijo Lagoon.

The City of Del Mar corridor improvements include double tracking with trench and tunnel options. Land uses along the existing rail corridor in this area include residential areas, a restaurant and the Del Mar Fairgrounds and Racetrack at the north end near the San Dieguito Lagoon; residential development through most of Del Mar; and the Los Penasquitos Lagoon on the south end. The trench option would utilize the existing corridor alignment along the bluffs above the beach and shoreline and below the residential homes. The tracks would be at-grade prior to the bluffs on the north end, and on a bridge across San Dieguito Lagoon. They would be set in a covered trench along the bluffs, thus removing the existing tracks from the viewshed. However, it is expected that seawalls and/or tie-back walls would be needed to stabilize the bluffs for the long term. These would degrade the existing coastal views and aesthetics of the area, and therefore this option is evaluated as having a Medium to High impact to the visual environment, depending on the extent of stabilization structures that would have to be added.

The Camino del Mar tunnel option would remove the existing tracks from the bluffs and place them in a tunnel under the street through Del Mar, resulting in a beneficial impact on area aesthetics and the coastal viewshed. While the two tunnel portals would have some visual impact, the impact would be within the urban environment along transportation corridors (roadway and rail), and would not substantially alter existing aesthetics.

The I-5 tunnel option would also remove the existing tracks from the bluffs and remove the existing rail structure crossing the Penasquitos Lagoon, improving the views from some residences, the beaches/bluffs and the lagoon. This tunnel option, however, would create new visual impacts and shadow impacts for residents along the south edge of the San Dieguito Lagoon where an elevated rail structure would be located. The existing San Dieguito Lagoon bridge would be rebuilt to accommodate the double-tracking, increasing the existing shadow effects somewhat. The southern tunnel portal would be located at the edge of the Los Penasquitos Lagoon. The northern portal and tunnel-transition area would be located between two clustered residential areas, creating a new visual impact in the near-views from these homes. Therefore, despite removal of the track from the bluffs, the impacts of the elevated structure and portals and tunnel-transition areas would result in an overall Medium level of visual impact for this alternative.

Corridor improvements between the I-5/805 split and Highway 52 consist of two tunnel options. One option would traverse through Miramar Hill and into La Jolla/University Towne Centre (UTC) area. The other tunnel option would follow the I-5 corridor. Both tunnels would connect to the existing rail corridor in Sorrento Valley near the area where I-5 meets with Highway 52. The tunnel options would avoid visual impacts to the homes, beaches, roadways, businesses, and schools.

Corridor improvements between Highway 52 and the Santa Fe Depot include the Elvira curve realignment, double tracking and trenching. The Elvira Curve realignment is located at-grade within the San Clemente Canyon area near Highway 52 and south through an urbanized and developed area with business and industrial buildings to just south of Balboa Avenue. Potential minor visual impacts to the public recreational uses and two bridge structures at San Clemente Canyon may occur with the realignment. In the area just south of the Elvira Curve realignment towards Taylor Street, double tracking would be done in the existing rail corridor through a heavily urbanized (business/industrial with light residential) area parallel to I-5. The bridge crossing design at the San Diego River would be consistent with the current environment and existing rail corridor and thus would not alter the viewshed. Trenching and double tracking would occur as the corridor entered into downtown San Diego and the Santa Fe Depot through an existing urbanized area parallel to I-5. Low impacts are anticipated with the Elvira Curve, specifically through the San Clemente Canyon.

CONVENTIONAL RAIL STATIONS

Except where otherwise noted below, station improvements along the Conventional Rail corridor would involve adding bypass tracks and/or additional parking at existing stations (see Table 1-3). These impacts would all be Low and nearly unnoticeable. New stations are proposed as part of three alignment

options. As described below, two of those proposed stations would be below-grade in a trench, and one would be underground. Existing visual settings at the stations are briefly summarized below:

- Fullerton Station is located in a heavily developed area of existing residential, business, and industrial/commercial uses.
- Anaheim Station is located within the parking lot of Edison Field and adjacent business park.
- Santa Ana Station is located in an urbanized area with industrial and residential uses.
- Irvine Station is located in a developed area with industrial uses and the old El Toro Marine Corps Air Station.
- The existing San Juan Capistrano Station is in an historic area of the town. The proposed parking improvements and bypass tracks would not alter the visual setting at the station. The Trabuco Creek trench option would involve construction of a new station which would be located below-grade in an open trench, resulting in low impacts on the surrounding visual environment.
- The existing San Clemente Station is located just north of the San Clemente Pier along the beach, just west of the existing tracks. The area is urbanized with a mix of residential and some businesses. With either of the trenching options in San Clemente, a new below-grade station would replace the existing station, thus reducing the visual impact. It is not known at this time if the existing San Clemente Station would remain at its existing location or be removed. For the two-segment, long tunnel option, a new station would be located below-grade between tunnel segments. The one-segment tunnel option would preclude the ability to locate a new station along the alignment.
- The Oceanside Station is located within an urbanized area with commercial and residential uses.
- The Solana Beach Station is located adjacent to the Cedros Design District (businesses and commercial shops) and some scattered residential homes.
- For the Miramar Tunnel option, a new underground station is proposed in the La Jolla/University Towne Center area, which is primarily developed with a mix of residential and business uses.
- The Santa Fe Depot is located in downtown San Diego in an urbanized and redeveloped area with mixed uses of residential and commercial.

5.0 REFERENCES

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APPENDIX A

Appendix A
Conventional Rail Route Combinations for Impact Comparison

As described in Chapter 1 of this Technical Evaluation, there are numerous alignment and construction options in the Conventional Rail portion of the High-Speed Train Alternative for the Los Angeles – Orange County – San Diego Region. To allow a reasonable comparison of impacts among the No Build, Modal, and High-Speed Train Alternative, the Conventional Rail improvement options are summarized by showing a range of potential impacts (Table 1-4, Chapter 1). This range is represented by two of many possible route combinations between Union Station and San Diego: (1) a Higher Level Infrastructure route, and (2) a Lower Level Infrastructure route. The Higher Level route is based on combining the alignment/construction options (one from each sub-segment) that would involve the most extensive infrastructure investment and/or construction complexity. For example, where a sub-segment has both an at-grade option and a trenching option in the same general alignment, the trenching option was used for the Higher Level route, and the at-grade option was used in the Lower Level route. Where two tunnel options are the only options in one sub-segment, the longer tunnel was included in the Higher Level route. In this way, a range of potential impacts could be bracketed to allow a valid comparison of the High-Speed Train Alternative to the No Build and the Modal Alternative.

The specific alignment and construction options included in both the Higher and the Lower Level routes are shown in Tables A-1 and A-2. These representative routes do not include any of the options that were eliminated from further consideration during the LOSSAN screening process. It must be emphasized that these routes serve only to provide a reasonable range of impacts for comparative purposes. They do *not* represent any selection of a particular option as preferred. No selection of preferred alignment options will be done until subsequent stages of this project.

Table A-1
LOWER LEVEL INFRASTRUCTURE IMPROVEMENTS

CONVENTIONAL RAIL (LOSSAN) & STATION OPTIONS
Union Station To Fullerton Station (4th main track)
Fullerton Station To Irvine Station
Alignment
AT-GRADE between Walnut Ave (Orange) and E. 17th St. (Santa Ana)
Stations
Fullerton
Anaheim
Santa Ana
Irvine
Irvine Station To San Juan Capistrano City Limits(no improvements)
San Juan Capistrano (City Limits to Avenida Aeropuerto)
Alignment
AT-GRADE and Open TRENCH along east side of Trabuco Creek
Stations
San Juan Capistrano (New, below-grade station)
Dana Point/San Clemente (Avenida Aeropuerto To San Onofre Power Plant)
Alignment
Dana Point Curve Realignment; San Clemente - SHORT TUNNEL; Double Tracking (crossing San Mateo and San Onofre Creeks)
Stations
San Clemente (New Station – location to be determined)
Camp Pendleton (San Onofre Power Plant to Oceanside City Limits - Double tracking; crosses Santa Margarita River)
Oceanside/Carlsbad (Oceanside City Limits to Encinitas City Limits)
Alignments
Carlsbad - AT-GRADE; double tracking; crosses San Luis Rey, Buena Vista , Aqua Hedionda, and Batiquitos Lagoons
Stations
Oceanside
Encinitas/Solana Beach (Encinitas City Limits to Solana Beach Station)
Alignment
Encinitas - AT-GRADE; Double Tracking; crosses San Elijo Lagoon
Stations
Solana Beach
Del Mar(Solana Beach Station to I-5/805 Split)
Alignment
TUNNEL under Camino Del Mar; crosses San Dieguito and Los Penasquitos Lagoons
I-5/805 Split To Hwy 52
Alignment
I-5 Tunnel
Hwy 52 To Santa Fe Depot (Curve realignment; Double Tracking; San Diego River Bridge; Trench between Sassafras St and Cedar St)
Stations
Santa Fe Depot

Table A-2
HIGHER LEVEL INFRASTRUCTURE IMPROVEMENTS

CONVENTIONAL RAIL (LOSSAN) & STATION OPTIONS
Union Station To Fullerton Station (4th main track)
Fullerton Station To Irvine Station
Alignment
TRENCH between Walnut Ave (Orange) and E. 17th St. (Santa Ana)
Stations Fullerton Anaheim Santa Ana Irvine
Irvine Station To San Juan Capistrano City Limits(no improvements)
San Juan Capistrano (City Limits to Avenida Aeropuerto)
Alignment
TUNNEL along I-5 between Hwy 73 and Avenida Aeropuerto (tunnel under Trabuco Creek and San Juan Creek); Double tracking
Dana Point/San Clemente (Avenida Aeropuerto To San Onofre Power Plant)
Alignment
San Clemente - LONG TWO-SEGMENT TUNNEL; Double Tracking (crosses San Mateo and San Onofre Creeks)
Stations
San Clemente (New below-grade station between tunnel segments)
Camp Pendleton (San Onofre Power Plant to Oceanside City Limits - Double tracking; crosses Santa Margarita River)
Oceanside/Carlsbad (Oceanside City Limits to Encinitas City Limits) Alignment
Carlsbad -TRENCH; double-tracking; crosses San Luis Rey, Buena Vista, Aqua Hedionda, and Batiquitos Lagoons
Stations
Oceanside
Encinitas/Solana Beach (Encinitas City Limits to Solana Beach Station)
Alignment
Encinitas - SHORT TRENCH; Double Tracking; crosses San Elijo Lagoon
Stations Solana Beach
Del Mar(Solana Beach Station to I-5/805 Split)
Alignment
TUNNEL along I-5; crosses San Dieguito and Los Penasquitos Lagoons
I-5/805 Split To Hwy 52
Alignment
Miramar Hill Tunnel
Stations UTC
Hwy 52 To Santa Fe Depot (Curve realignment; Double Tracking; San Diego River Bridge; Trench between Sassafras St and Cedar St)
Stations
Santa Fe Depot

APPENDIX – B

APPENDIX B - VIEWPOINT LOCATION MAP


SAN BERNARDINO
San Bernardino
LOS ANGELES
Los Angeles
Ontario
Viewpoint 1: Norwalk
Riverside
LAX
91
215
Anaheim
RIVERSIDE
ORANGE
15
5
Irvine
Viewpoint 2: Dana Point
San Juan Capistrano
Viewpoint 3: San Clemente
15
Coastal Communities and Lagoons
5
Oceanside
SAN DIEGO
Pacific
Viewpoint 4: Carlsbad
Escondido
Viewpoint 5: Batiquitos Lagoon
Viewpoint 6: Cardiff
15
Solana Beach
Ocean
Viewpoint 7: Del Mar Bluffs
8
163
Mission Bay
San Diego
Source: CA Dept. of Fish and Game 1999
January 30, 2004
California High Speed Train Program EIR/EIS
Legend
Scenic Area
Figure Reference and Photo Location
High Speed Train Alignment and Potential Stations
County Boundaries
5 0 5 10 Miles
5 0 5 10 Kilometers
CALIFORNIA HIGH SPEED RAIL AUTHORITY
Scenic Areas and Photo Locations
Los Angeles to San Diego
via Orange County Region